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09/917,250	07/27/2001	Warren Dalziel	08173-048001/	7795

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EXAMINER	
LE, MINH	
ART UNIT	PAPER NUMBER
2652	

DATE MAILED: 02/12/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/917,250	Applicant(s) DALZIEL, WARREN	
	Examiner Minh Le	Art Unit 2652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-25 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-25 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on 7/27/01 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "510" in Fig. 5 has been used to designate two different ends of the spring plate 500.

2. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3 The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-6 and 24 rejected under 35 U.S.C. 102(e) as being anticipated by Berg et al. (U.S. Pat. 6,178,157).

As to claims 1 and 24, Berg shows in Figs. 2-4 a device comprising a disk holder 201 operable to hold and spin an optical disk 107, an optical head 101 having an optical interfacing surface (the surface of the slider 101 facing the disc 107 in Fig. 8) which is operable to couple radiation energy 301 (Fig. 4) to and from the optical disk 107 held by the disk holder 201 for reading data from or writing data to the optical disk, an actuator 109 (Fig. 4/ col. 6, lines 19-21) engaged to said optical head 101 and operable to move

and position said optical head over the disk, and a load actuator 103 (See Fig. 4) operable to apply a force (col. 3, lines 29-36/col. 6, lines 19-21) to cause said optical head to contact the optical disk at a contact location of said optical interfacing surface when reading or writing data.

As per claim 2, Berg shows in Figs. 3, 8 a device as in claim 1, wherein said optical interfacing surface (the small curved surface facing the disc 107 in Fig. 8) is a curved surface with a protruded apex at or near which said load actuator 103 causes said optical head to contact the optical disk 107 during reading or writing data.

As per claim 3, Berg shows in Figs. 3, 8 a device as in claim 2, wherein said curved surface is spherical (the small curved surface facing the disc 107 in Fig. 8).

As per claim 4, Berg shows in Figs. 3, 8 a device as in claim 2, wherein said optical head is configured to have at least a portion of optical energy totally reflected at said optical interfacing surface (the flat surface near to the small curved surface facing the disc 107 in Fig. 8).

As per claim 5, Berg shows in Figs. 3, 8 a device as in claim 4, wherein said optical head includes a coupling lens (the lower lens in Fig. 8) having a first spherical optical surface (the greater curved surface of the coupling lens in Fig. 8) with a first radius of curvature and a second (the smaller curved surface facing the disc 107 in Fig. 8), opposing spherical optical surface with a second radius curvature greater than said first radius of curvature, wherein said optical interfacing surface is a portion of said second spherical optical surface (the small curved surface facing the disc 107 in Fig. 8).

As per claim 6, Berg shows in Fig. 3 a device as in claim 5, wherein said optical head includes an objective lens (the lens at the top of the slider 101 in Fig. 8) to couple optical energy to or from said coupling lens (the lower lens in Fig. 8).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 9, 11-13 and 16 rejected under 35 U.S.C. 103(a) as being unpatentable over Berg in view of Knight (U.S. Patent No. 5,881,042).

As per claim 11, Berg shows in Figs. 2-4 a device comprising a disk holder 201 operable to hold and spin an optical disk 107, an optical head 101 having an objective lens and a coupling lens (Fig. 8) operable to couple radiation energy 301 (Fig. 4) to and from the optical disk for reading data from or writing data to the optical disk 107, said coupling lens having an optical interfacing surface through which the radiation energy is coupled, an actuator 109 operable to cause said optical head to move and position over the disk.

Berg does not expressly disclose a device wherein two parallel springs each having one end engaged to said actuator and another end to hold said optical head, said two parallel springs displaced from each other along a direction substantially perpendicular to the optical disk and configured to confine movement of said optical head relative to said actuator along said direction; and a load actuator operable to apply a force

to cause said optical head to contact the optical disk at a contact location of said optical interfacing surface when reading or writing data.

Knight shows in Fig. 5 a device comprising two parallel springs 131, 131 each having one end engaged to the actuator and another end to hold the optical head, the two parallel springs displaced from each other along a direction substantially perpendicular to the optical disk and configured to confine movement of the optical head relative to the actuator along the direction, and a load actuator operable to apply a force to cause the optical head to contact the optical disk at a contact location of the optical interfacing surface when reading or writing data (col. 6, lines 39-44).

It would have been obvious to a person having ordinary skill in the art at the time invention was made to provide a device comprising two parallel springs each having one end engaged to the actuator and another end to hold the optical head, the two parallel springs displaced from each other along a direction substantially perpendicular to the optical disk and configured to confine movement of the optical head relative to the actuator along the direction, and a load actuator operable to apply a force to cause the optical head to contact the optical disk at a contact location of the optical interfacing surface when reading or writing data, in order to make a optical head wherein "the flying head may be maintained in focus", as taught by Knight (See col. 1, lines 28-29).

As per claim 12, Berg shows in Figs. 3, 8 a device, wherein said optical interfacing surface of said coupling lens (the small curved surface facing the disc 107 in Fig. 8) is a curved surface a protruded apex at or near which said optical interfacing surface is in contact with the optical disk under said force.

As per claim 13, Berg shows in Figs. 3, 8 a device, wherein said optical head 101 (Fig. 3) includes a carrier 601 (Fig. 8) that holds said objective and said coupling lenses, said carrier having a carrier surface substantially in said curved surface.

As per claim 16, Berg shows in Figs. 3 and 9 a device, wherein said load actuator 103 includes has a first load actuator part engaged to the actuator 109 (Fig. 3) and a second actuator part engaged to said optical head 101 (Fig. 3), said first and said second load actuator parts operable to move relative to each other along said direction in response to a load control signal.

As per claim 9, Berg does not expressly disclose a device as in claim 1, further comprising two parallel springs that engage said optical head to said actuator and confine motion of said optical head in a direction substantially perpendicular to the optical disk.

Knight shows in Fig. 5 a device comprising two parallel springs 131, 131 that engage the optical head to the actuator and confine motion of the optical head in a direction substantially perpendicular to the optical disk (col. 6, lines 39-44).

It would have been obvious to a person having ordinary skill in the art at the time invention was made to provide a device comprising two parallel springs 131, 131 that engage the optical head to the actuator and confine motion of the optical head in a direction substantially perpendicular to the optical disk, in order to make a optical head wherein "the flying head may be maintained in focus", as taught by Knight (See col. 1, lines 28-29).

7. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Berg in view of Kawamura (U.S. Patent No. 6,134,195).

As per claim 7, Berg does not expressly disclose a device comprising a lens actuator engaged to at least one of said objective and said coupling lenses and operable to change a spacing therebetween in response to a control signal.

Kawamura shows in Fig. 3 a device comprising a lens actuator engaged to at least one of said objective and said coupling lenses 31, 32 and operable to change a spacing therebetween in response to a control signal (col. 2, lines 58-67/col. 3, lines 1-17).

It would have been obvious to a person having ordinary skill in the art at the time invention was made to provide a device comprising a lens actuator engaged to at least one of the objective and the coupling lenses and operable to change a spacing therebetween in response to a control signal, in order to make a optical head "in which an adjustment means for adjusting the axial distance between the first and second lenses is simplified in structure to reduce the size and weight of the entire device, and in which power consumption required in adjusting the axial distance between the first and second lensses can be reduced", as taught by Kawamura in col. 2, lines 14-21.

8. Claim 8 rejected under 35 U.S.C. 103(a) as being unpatentable over Berg in view of Ishizaki et al. (U.S. Patent No. 6,434,088).

As per claim 8, Berg does not expressly disclose a device as in 1, wherein said optical head includes a carrier surface substantially in said optical interfacing surface, wherein said carrier surface includes a plurality grooves to reduce air resistance of said optical head when said optical interfacing surface is in contact with the spinning optical disk.

Ishizaki shows in Figs.3, 22, 23A a device, wherein the optical head includes a carrier surface (the surface of carrier 102 facing the disc 51 in Fig. 22) substantially in the

optical interfacing surface, wherein the carrier surface includes a plurality grooves (Fig. 23A) to reduce air resistance of the optical head when the optical interfacing surface is in contact with the spinning optical disk.

It would have been obvious to a person having ordinary skill in the art at the time invention was made to provide a device, wherein the optical head includes a carrier surface substantially in the optical interfacing surface, wherein the carrier surface includes a plurality grooves to reduce air resistance of the optical head when the optical interfacing surface is in contact with the spinning optical disk, in order to make a optical head wherein "the actuator may actively control load force as part of a feedback loop which maintains the flying head at a constant flying height", as taught by Berg (See abstract).

9. Claim 25 and rejected under 35 U.S.C. 103(a) as being unpatentable over Berg in view of Boutaghou (U.S. Pat 5,870,362).

As per claim 25, Berg does not expressly disclose the method comprising causing two support pads substantially coplanar with the selected protruded location to be provided, and pressing the two support pads and the selected protruded location in contact with the optical disk when data is read or written.

Boutaghou discloses a method comprising causing two support pads 102, 1102 (See Fig. 3A) substantially coplanar with the selected protruded location to be provided, and pressing the two support pads 102, 102 and the selected protruded location in contact with the optical disk when data is read or written.

It would have been obvious to a person having ordinary skill in the art at the time invention was made to provide the method comprising causing two support pads

substantially coplanar with the selected protruded location to be provided, and pressing the two support pads and the selected protruded location in contact with the optical disk when data is read or written, in order to make a optical head wherein "the actuator may actively control load force as part of a feedback loop which maintains the flying head at a constant flying height", as taught by Berg (See abstract).

10. Claims 10 and 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Berg and Knight as applied to claims 1, 9 and 11 above, and further in view of Boutaghou (U.S. Pat 5,870,362).

As per claim 10, Berg discloses a device as in claim 9, further comprising a flexure 105 (Fig. 9) having one end engaged to a spring and another end engaged to said optical head.

Berg and Knight do not expressly disclose a device wherein the flexure configured to have two support pads substantially in a common plane with the contact location of the optical interfacing surface, wherein the load actuator is operable to press two support pads and the contact location of the optical interfacing surface on the optical disk when the force is applied during reading or writing data.

Boutaghou discloses a device 100 (See Fig. 3A) including the support pads 102, 102 substantially in a common plane with the contact location of the optical interfacing surface.

It would have been obvious to a person having ordinary skill in the art at the time invention was made to provide a device wherein the flexure configured to have two support pads substantially in a common plane with the contact location of the optical interfacing surface, wherein the load actuator is operable to press two support pads and

the contact location of the optical interfacing surface on the optical disk when the force is applied during reading or writing data, in order to make a optical head wherein "the actuator may actively control load force as part of a feedback loop which maintains the flying head at a constant flying height", as taught by Berg (See abstract).

As per claim 15, Berg discloses a device as in claim 9, further comprising a flexure 105 (Fig. 9).

Berg and Knight do not expressly disclose a device, wherein the flexure engaged between said two parallel springs and said optical head to allow said optical head move along said direction relative to said two parallel springs, said flexure having two support pads substantially in a common plane with said contact location of said optical interfacing surface, wherein said load actuator is operable to press said two support pads and said contact location of said optical interfacing surface on the optical disk when said force is applied when reading or writing data.

Boutaghou discloses a device 100 (See Fig. 3A) including the support pads 102, 102 substantially in a common plane with the contact location of the optical interfacing surface.

It would have been obvious to a person having ordinary skill in the art at the time invention was made to provide a device, wherein the flexure engaged between said two parallel springs and said optical head to allow said optical head move along said direction relative to said two parallel springs, said flexure having two support pads substantially in a common plane with said contact location of said optical interfacing surface, wherein said load actuator is operable to press said two support pads and said contact location of said optical interfacing surface on the optical disk when said force is applied when

reading or writing data, in order to make a optical head wherein "the actuator may actively control load force as part of a feedback loop which maintains the flying head at a constant flying height", as taught by Berg (See abstract).

11. Claim 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Berg and Knight as applied to claims 11 and 13 above and further in view of Ishizaki et al. (U.S. Patent No. 6,434,088).

As per claim 14, Berg and Knight do not expressly disclose a device, wherein the carrier surface includes a plurality grooves to reduce air resistance of the optical head when the optical interfacing surface is in contact with the spinning optical disk.

Ishizaki shows in Figs.3, 22, 23A a device, wherein the carrier surface (the surface of carrier 102 facing the disc 51 in Fig. 22) includes a plurality grooves (Fig. 23A) to reduce air resistance of the optical head when the optical interfacing surface is in contact with the spinning optical disk.

It would have been obvious to a person having ordinary skill in the art at the time invention was made to provide a device, wherein the carrier surface includes a plurality grooves to reduce air resistance of the optical head when the optical interfacing surface is in contact with the spinning optical disk, in order to make a optical head wherein "the actuator may actively control load force as part of a feedback loop which maintains the flying head at a constant flying height", as taught by Berg (See abstract).

12. Claims 17, 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Berg and Knight as applied to claims 11 and 16 above and further in view of Kahlman et al. (U.S. Patent No. 6,262,953).

As per claim 17, Berg and Knight do not expressly disclose a device, wherein one load actuator part includes a permanent magnet and the other load actuator part includes a magnetic coil.

Kahlman discloses in Fig. 1 a device, wherein one load actuator part includes a permanent magnet 53 and the other load actuator part includes a magnetic coil 55a.

It would have been obvious to a person having ordinary skill in the art at the time invention was made to provide a device, wherein one load actuator part includes a permanent magnet and the other load actuator part includes a magnetic coil, in order to make a optical head wherein "the actuator may actively control load force as part of a feedback loop which maintains the flying head at a constant flying height", as taught by Berg (See abstract).

As per claim 18, Berg and Knight do not expressly disclose a device, wherein said other load actuator part further includes a second magnet that attracts to said permanent magnet, and wherein said magnetic coil is designed to repel from said permanent magnet when receiving a driving current to load said optical head on the optical disk.

Kahlman discloses in Fig. 8 a device, wherein said other load actuator part further includes a second magnet 153b that attracts to the permanent magnet, and wherein the magnetic coil 155b is designed to repel from said permanent magnet when receiving a driving current to load the optical head on the optical disk (col. 6, lines 63-67/col.7, lines 1-18).

It would have been obvious to a person having ordinary skill in the art at the time invention was made to provide a device, wherein said other load actuator part further includes a second magnet that attracts to said permanent magnet, and wherein said

magnetic coil is designed to repel from said permanent magnet when receiving a driving current to load said optical head on the optical disk, in order to make a optical head wherein "the actuator may actively control load force as part of a feedback loop which maintains the flying head at a constant flying height", as taught by Berg (See abstract).

13. Claims 19, 20 and 22 rejected under 35 U.S.C. 103(a) as being unpatentable over Berg and Knight as applied to claim 11 above and further in view of Kawamura (U.S. Patent No. 6,134,195).

As per claim 19, Berg and Knight do not expressly disclose a device comprising a lens actuator engaged to at least one of said objective and said coupling lenses and operable to change a spacing therebetween in response to a control signal.

Kawamura shows in Fig. 3 a device comprising a lens actuator engaged to at least one of said objective and said coupling lenses 31, 32 and operable to change a spacing therebetween in response to a control signal (col. 2, lines 58-67/col. 3, lines 1-17).

It would have been obvious to a person having ordinary skill in the art at the time invention was made to provide a device comprising a lens actuator engaged to at least one of the objective and the coupling lenses and operable to change a spacing therebetween in response to a control signal, in order to make a optical head "in which an adjustment means for adjusting the axial distance between the first and second lenses is simplified in structure to reduce the size and weight of the entire device, and in which power consumption required in adjusting the axial distance between the first and second lenses can be reduced", as taught by Kawamura in col. 2, lines 14-21.

As to claims 20 and 22, Berg and Knight do not expressly disclose a device, wherein the lens actuator includes a piezo-electric element and an electromagnetic element.

Kawamura shows in Fig. 3 a device, wherein the lens actuator includes a piezo-electric element and an electromagnetic element (col. 2, lines 38-57/col. 5, lines 60-67).

It would have been obvious to a person having ordinary skill in the art at the time invention was made to provide a device, wherein the lens actuator includes a piezo-electric element and an electromagnetic element, in order to make a optical head "in which an adjustment means for adjusting the axial distance between the first and second lenses is simplified in structure to reduce the size and weight of the entire device, and in which power consumption required in adjusting the axial distance between the first and second lenses can be reduced", as taught by Kawamura in col. 2, lines 14-21.

14. Claim 21 rejected under 35 U.S.C. 103(a) as being unpatentable over Berg, Knight and Kawamura as applied to claims 11 and 19 above and further in view of Kamasa et al. (U.S. Patent No. 6,466,537).

Berg, Knight and Kawamura do not expressly disclose a device, wherein said lens actuator includes an electrostatic element.

Kamasa discloses a device, wherein said lens actuator includes an electrostatic element (col. 12, lines 29-39).

It would have been obvious to a person having ordinary skill in the art at the time invention was made to provide a device, wherein said lens actuator includes an electrostatic element, in order to "to create near-field light on a surface of the recording medium", as taught by Osborne in col. 3, lines 37-38.

15. Claim 23 rejected under 35 U.S.C. 103(a) as being unpatentable over Berg, Knight and Kawamura as applied to claims 11 and 19 above and further in view of Osborne (U.S. Patent No. 5,107,107).

Berg, Knight and Kawamura do not expressly disclose a device, wherein said coupling lens is engaged to a diaphragm spring to move relative to said objective lens when said diaphragm is deformed.

Osborne shows in Fig. 8 a device wherein the coupling lens is engaged to a diaphragm spring 92 (col. 8, lines 22-34).

It would have been obvious to a person having ordinary skill in the art at the time invention was made to provide a device, wherein said coupling lens is engaged to a diaphragm spring to move relative to said objective lens when said diaphragm is deformed, in order to "provide a method for the application of angular position sensing by use of optical disc or compact disc (CD) and the associated optics which track a plane of focus within the disc", as taught by Osborne in col. 3, lines 10-14.

Prior art cited

16. The prior art made record and not relied upon is considered pertinent to applicant's disclosure.

Boutaghou et al. (U.S. Pat. No. 6,327,241) discloses an adjustable lens mount couples the objective lens to the slider.

Inquires

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Le whose telephone number is (703) 305-7867. The examiner can normally be reached on 10:00AM - 7:00PM (Mon- Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T Nguyen can be reached on (703) 305-9687. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3718 for regular communications and (703) 305-3718 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

ML
February 10, 2003

HOA T. NGUYEN
SUPERVISORY PATENT EXAMINER
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2/10/03